

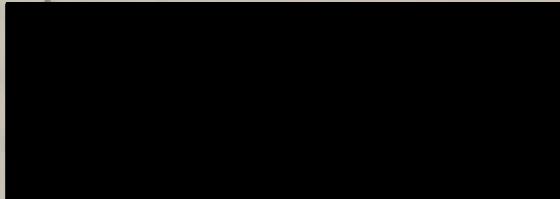
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AN EVALUATION OF A JUNIOR HIGH SCHOOL
REMEDIAL READING PROGRAM

By

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APPROVED:



For the Degree of
MASTER OF EDUCATION

THE UNIVERSITY OF TEXAS
JUNE, 1961

AN EVALUATION OF A JUNIOR HIGH SCHOOL

REMEDIAL READING PROGRAM

The author has written this report as a description and evaluation of my own reading classes. Writing it has taught me a great deal, and I sincerely hope that it will be of some value to others also.

By

The remedial reading program in my school has been underway for about a year. As a teacher, I felt that some type of evaluation was necessary. This study was made to appraise the program as it is and to propose changes by the results indicated.

THESIS

Presented to the Faculty of the Graduate School of The University of Texas in Partial Fulfillment of the Requirements

For the Degree of
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I want to give special thanks to several people whose help and encouragement made this thesis possible: to my husband, Willard P. Johnson; to Geneva Beane, my teacher; to Harmon McLellan, my advisor; to my students who unknowingly helped; and to many others.

THE UNIVERSITY OF TEXAS
JUNE, 1961

Ethel Johnson

The University of Texas

Austin, Texas

May, 1961

PREFACE

The subject of this thesis is the description and evaluation of my own reading classes. Writing it has taught me a great deal, and I sincerely hope that it will be of some value to others also.

The remedial reading program in my school has been underway for about three years. As a teacher, I felt that some type of evaluation was necessary. This study was made to appraise the program as it is and to propose changes by the results indicated. Both objective and subjective data have been employed in the analysis. During the statistical analysis, I found out what most statisticians already know--that figures don't always come out the way we want them to. However, the statistical analysis in the study is limited by the relatively few students involved. The subjective evaluation is more encouraging.

I want to give special thanks to several people whose help and encouragement made this thesis possible: to my husband, Willard P. Johnson; to Geneva Hanna, my teacher; to Harmon McClellan, my principal; to my students who unknowingly helped with this report; and to many others.

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CHAPTER I

INTRODUCTION

The need for remedial reading. The ability to read is one of the most important requirements for effective living in our society today. Since reading is the primary medium for instruction in most subjects, success in school is dependent on effective reading skills. Success in the world of business is closely related to reading ability. Of equal importance is the part reading plays in self-improvement and enjoyment. The efficient reader has more opportunities and advantages than has his non-reading peer in school, business, and pleasure. Surely, reading can be classified as an essential characteristic of a well-rounded, well-educated person.

The student who is not reading up to capacity is at a disadvantage in our society that depends so greatly on the printed word. His inadequacy in reading is a definite handicap. The remedial reading program seeks to eliminate that handicap by helping him to improve his skill in reading.

"When we teach this skill to a child, we hand him a passport to cross boundaries of time and space, a letter of introduction to the great minds in all parts of the world and in

all periods of time."¹

Schools and educators have long recognized the importance of reading in the life of a child. This fact can be seen by the voluminous amount of research done in the field of reading. The many studies have covered every phase of the reading program including remedial reading. Reading experts and authorities in reading are continually searching for new and more efficient methods of teaching reading.

Although notable progress has been made in recent years, the situation is still serious. Gates² says:

Despite the quantity of experimental data, the wealth of ingenious teaching devices, the range of interesting children's reading material, and the large amount of school time available for teaching reading, a surprisingly large number of pupils still experience difficulty in acquiring satisfactory reading skills.

Blair³ says the most convincing evidence of the seriousness of the reading problem is seen in the statistical studies taken from reading tests given to many classes over the country. He cites a case in which ninety-one high school

¹Educational Policies Commission, The Purposes of Education in American Democracy, p. 55.

²Arthur I. Gates, The Improvement of Reading, p. 2.

³Glenn Myers Blair, Diagnostic and Remedial Teaching in Secondary Schools, p. 6.

freshmen were tested. Their reading grades ranged from fourth grade to college level. This condition indicates a need for setting up reading improvement programs in schools.

In summarizing a survey instigated by the National Association of Remedial Teachers, Traxler⁴ reports that three-fourths of the participating schools do have programs for corrective reading, but that only 1 to 10 per cent of their pupils receive the instruction. Reading tests indicate that in most schools a much larger proportion of pupils need corrective attention.

McKee⁵ says, "At least 12 per cent of the pupils in our schools today have not acquired the degree of skill in word identification which they can be expected to acquire."

Poor reading is a handicap that may hinder a student from achieving his full potential during his stay in school. It may lead to problems of delinquency and personality disturbances. Many students who drop out of school during the middle grades may do so because of their inability to read well. Improving the quality of reading is an important task for schools.

⁴Arthur E. Traxler, "Current Organizations and Procedures in Remedial Teaching," Journal of Experimental Education, 20:305-312, March, 1952.

⁵Paul McKee, The Teaching of Reading in the Elementary School, p. 41.

Background and description of the problem area.

Four years ago the writer was asked by her principal to teach several remedial reading classes. Because of her interest in the field of reading, she gladly accepted. The program had been inaugurated the previous year with one special reading class taught by another teacher. This class was deemed successful enough to warrant the continuation and enlargement of the program. The current term is the writer's third year of teaching the remedial classes.

At the present time, remedial reading is offered to seventh and eighth grade students as an elective subject which is taken in addition to the regular language arts reading program. Many students elect to take the course on their own initiative because they either like reading or feel that they need to improve. However, most of the students are placed there by the school counselor because of their low reading achievement scores on the standardized tests given each year.

There are two eighth grade remedial reading classes and two seventh grade classes. One other class is taught by the teacher, a reading skills class of eighth graders which is composed of the better readers. The time allotted to each class is fifty minutes daily, five days a week for one semester. The total time for instruction is eighty-seven hours.

The community of Edinburg is located in the southern tip of Texas in the Rio Grande Valley. It is the county seat of Hidalgo County. The population in the 1960 census was 18,706. Edinburg, situated in a farming area, has a large vegetable and fruit packing and shipping industry. Cotton is a major product in the summer, while vegetables are grown nearly the year round. A description from the Texas Almanac⁶ states:

Nearly all of the delta area is cultivated and under irrigation, producing citrus fruits, cotton and a great variety of vegetables for the national winter market.

The agrarian nature of the community creates a migratory problem for the school and the students. Many farm laborers migrate to the North where field work is plentiful taking their school-age children with them. The exodus occurs in March and April. They return to the Valley and school in November and December. Many of the children are not enrolled in any school during their stay away from their homes. The migratory factor results in many over-age students and in a great number of late entries and early withdrawals.

Over three-fourths of the remedial reading students are from low-income families of Mexican decent. Both English

⁶Texas Almanac, The Dallas Morning News, 1961-62, p. 589.

and Spanish are spoken in most of their homes. The limited resources in material comforts and the lack of opportunities for language development in the home has resulted in a meager background in cultural and educational experiences. With so few background experiences, these students have difficulty in bringing meaning to their reading.

The school is the only junior high school in the city. During the peak load months nearly one thousand students are enrolled in the seventh and eighth grades. These students come into the central junior high from eight elementary schools in the Edinburg Consolidated Independent School District.

Statement of the problem. This study purposes to evaluate the remedial reading program in the Edinburg Junior High school to find out if it achieves its objective of improving the reading efficiency of the students. The study will attempt to answer the following questions:

1. Does a statistical analysis of the results merit the program's inclusion in the curriculum?
2. Would the students have gained in reading ability just as much without the course as with it?
3. How do the results compare with other studies?
4. What changes are indicated by the results?

Procedure. Comparative methods and statistical measurements will be utilized in the analysis. Scores made at the completion of the course will be compared with the scores made at the end of the preceding year. These scores will be determined by standardized reading tests. The results of the testing in the form of gains or losses in reading in the form of grade-level scores will be compared with scores made by control groups not receiving the remedial instruction. Also, actual gain will be compared with estimates of probable or expected gains.

Other types of evaluation are more subjective but equally important. The students' interest in reading and their attitudes towards reading material will be considered and evaluated.

Definition of terms. A few definitions are presented here to aid in a more precise understanding of the meanings of the terms used in this study.

1. "Remedial reading classes." Usually, the term "remedial reading" indicates one teacher working with a few students. The large classes in this study probably should be called corrective reading. However, the classes will be referred to as remedial reading because they are so called in the school.

Constance M. McCullough, and Arthur E. Trexler, *Problems in the Improvement of Reading*, p. 228.

2. "Grade level or equivalent" is the score derived from grade norms on a standardized test. Ideally, every child in the second month of the seventh grade should be reading at a 7.2 grade level.

3. "Remedial teaching" is the locating of weaknesses and difficulties and giving instruction for correction.

Survey of the literature. Many programs of reading improvement have been described and published in educational journals. The results of these special reading classes are important for several reasons according to Strang, McCullough, and Traxler.⁷ An evaluation will help the teacher "to be in a position to give retarded readers confidence that they can improve, to convince those who hold the purse strings of the value of this work, and to reassure ourselves as teachers of reading that our efforts will bring results."

The following eight studies are typical of reading programs in action over the nation. Many other outstanding programs could have been cited. These were chosen for review because of their similarity of purpose to the present study. This review has a twofold purpose: (1) to present

⁷Ruth Strang, Constance M. McCullough, and Arthur E. Traxler, Problems in the Improvement of Reading, p. 228.

evidence of an experimental nature that remedial reading programs are effective, and (2) to establish a precedent for evaluation in the writer's study.

The Reading Clinic at the University of Minnesota has been reported on by Bond and Fay.⁸ They describe the general features of the clinic plus the diagnosis and remediation given. The students met at the clinic two hours a day for five weeks for remedial instruction in reading. The results were very satisfactory:

Many of the desired outcomes of the clinic were not measurable by means of standardized tests but were evaluated by teacher observation and judgment. The changes that took place in the pupils' interest and attitude towards reading and in their general reading ability were very encouraging for such a short period of instruction. These changes alone would justify the existence of the clinic.⁹

Two formulas were used to evaluate the students' progress. The first formula for Expected gain I is based upon the concept that past achievement is the best indication of what to expect in the present:

- (1)
$$\frac{\text{Past achievement}}{\text{Length of time in school}} = \text{Index of expectancy}$$
- (2)
$$\text{Index of expectancy} \times \text{length of instruction} = \text{Expected Gain}$$

⁸Guy L. Bond and Lee C. Fay, "A Report of the University of Minnesota Reading Clinic," Journal of Educational Research, 43:385-390, January, 1950.

⁹Ibid., p. 388.

The second formula for Expected gain II is based upon the concept that children generally progress at a rate comparable to their intelligence quotients:

(1) $I.Q. + 100 = \text{Index of expectancy}$

(2) $\text{Index of expectancy} \times \text{length of instruction} = \text{Expected Gain.}$

The total average gain for the five week period was .50 or 5 months. Expected Gain I was .10 or 1 month and Expected Gain II was .13 or a little over a month. The actual gain was much higher than the expected gains indicating that the clinic in Minnesota was very successful in measurable gains, as well as in improvement in interest, attitude, and general reading ability on the part of the students.

Turner¹⁰ describes a remedial reading program in the Sarasota, Florida Junior High school. The course, called "Reading Enrichment," was characterized by a quiet, relaxed, and orderly atmosphere. The pupils were chosen on the basis of a reading potential as determined by I.Q., achievement test records, and a physical examination. Turner says, "It was amazing that when all pressures were taken from these slow, insecure, often emotionally upset children, they

¹⁰Carla S. Turner, "Remedial Reading Pays Dividends in the Junior High School," English Journal, 48:136-140, March, 1959.

quickly got down to reading in their books and started to enjoy reading."

The results of the program are given in total averages. In vocabulary the average gain was .5 or five months. Comprehension showed a gain of 1.5 and speed increased 1.4. The students increased one year and one month in total average reading ability. Other medians of the forty-three pupils were: I.Q.-91; grade-eighth; age-13 years; days present-77. The average gain of one year and one month in grade level shows that the program was effective.

Landry¹¹ set up a controlled experiment involving 7,556 students in grades seven to twelve in twelve cities. The control classes followed the regular course of study. The experimental groups were given special reading instruction based on the Reader's Digest. Each month 226 minutes were devoted to systematic practice in reading. At the end of the study, tests revealed that the experimental classes had gained 13.2 months. The control group had gained only 6.2 months in the same length of time.

Another experiment in a high school was made by Dunn.¹² Two classes, a reading group and a control group,

¹¹Herbert A. Landry, "Teaching Reading with the Reader's Digest," English Journal, 32:320-324, June, 1943.

¹²Ethel Dunn, "An Experiment in Reading," Education, 61:294-297, January, 1941.

were formed and tested at the beginning of the experiment. At the end of twelve weeks of group reading activities, the two classes were tested again. The control group, who had had no reading instruction, tested 10.2 points lower than the reading group. Originally the control group was three points lower than the reading group, so their actual loss was 7.2 points. The pupils in the reading group made an average gain of one year while the pupils in the control group remained slightly below their original level.

Dunn's conclusion was that the students had the ability to read but needed direction to adjust that skill to the demands of the educational system. She suggested that more "How to Study" procedures were needed.

Bland¹³ describes the development of a reading program in a High School at Evanston, Illinois. In 1951, a two-fold reading improvement program was established by setting up a developmental reading program for all students and by providing a reading clinic with remedial classes called "English Reading." The school reading consultant works with the regular teachers to improve their instruction and also teaches the remedial classes. In addition to

¹³Phyllis Bland, "The Development of a Reading Program in the Evanston Township High School, Evanston, Illinois," from book by Elizabeth A. Simpson, Helping High-School Students Read Better, pp. 107-115.

these duties, she teaches Reading-Skill classes which are offered to upperclassmen on a voluntary basis. The program includes the following principal features:

1. Careful diagnosis and evaluation of the reading needs of students
2. Systematic instruction based on students' needs
3. Small classes to facilitate small-group and individual instruction
4. Diversified materials and activities related to the interests and reading abilities of student groups and individual students
5. Development of reading enjoyment and better reading attitudes.¹⁴

The evaluation of the program indicated that the time the students spent in the reading classes was highly worth-while. After nine months of reading instruction, according to test norms, the average gain for the freshmen was from 7.6 to 9.2 in reading level--an increase of 1.6 grades. The range for individual students was from -.1 to 4.3 grades.

Monroe and Backus¹⁵ conducted experiments at two Junior High schools. Several groups were given remedial instruction in reading for fourteen weeks. From the results they concluded that groups of children can be successfully given remedial reading treatment. However, smaller groups do respond with a greater amount of progress. The median

¹⁴Ibid., p. 107.

¹⁵Marion Monroe and Bertie Backus, Remedial Reading, pp. 113-129.

gain in reading level ability was 1.2 for group 1; 0.5 for group 2; and 1.3 for a third group. The experimenters report, "Individual cases often show gains of more than two years by these methods. Gains in the remedial work were accompanied in many cases by greater interest in reading and favorable changes in behavior."¹⁶

Lee¹⁷ reports an experiment with a seventh grade remedial reading class in Taylor Junior High School. A rich and varied remedial program was given to twenty-three students. Many tests were administered to diagnose the needs of the group and to evaluate the outcomes of the instruction. The 1.5 increase in grade equivalent is a significant gain for the seven months of work. The group went from 5.4 to 6.9 grade level--an increase of one year and five months.

Brown's¹⁸ evaluation of a fifth grade remedial reading class in a Hutto, Texas school reveals similar gains. Fourteen children were included in the experiment. The average gains varied with the tests given. The Gates Survey

¹⁶Ibid., p. 128.

¹⁷Frances Patterson Lee, "Remedial Reading in a Texas Seventh Grade," Unpublished Master's thesis, The University of Texas, Austin, 1950, p. 55.

¹⁸Bessie Lindell Brown, "Improving Reading in a Texas Middle Grade," Unpublished Master's thesis, The University of Texas, Austin, 1951, p. 106.

test showed a 1.6 gain for the eight month period. On the Ingraham-Clark test, the gain was .7. The Gates Basic Reading test showed a 2.0 average gain.

The measurable results of these eight remedial programs show significant gains for pupils who are retarded in reading. A year's gain in grade equivalent for the student with average ability and achievement is to be expected, but for the slow reader the same gain would be a large one. For example, an eighth-grade student with a 6.0 reading grade level has gained, according to Bond and Fay's formula,¹⁹ only an average of seven and one-half months for each year he has been in school. For this student any gain over seven or eight months is a definite improvement. Viewed in this light, the above studies have successfully accomplished their purpose.

Chapter I has presented an introduction to the factors relating to the present study. A need was shown for the practice of providing remedial reading classes for poor readers in Edinburg and elsewhere. The purpose of the study was stated as being an evaluation and statistical analysis of the writer's special reading classes. Problems to be considered were listed in question form. Methods of comparison to be utilized in the analysis were stated. Similar studies were reviewed in a survey of the literature dealing with the results of other reading improvement courses.

Chapter II will describe the course of study.

¹⁹ Bond and Fay, op. cit., p. 388.

CHAPTER II

UNDERLYING PHILOSOPHY AND PROCEDURES

Introduction. The purpose of this chapter is to describe in detail the procedures used in the Edinburg Junior High School remedial reading classes. Wherever possible, research and authoritative opinion will be given to substantiate the practices, methods, and techniques used by the teacher.

The nature of remedial reading. The primary purpose of a remedial program is to improve the reading efficiency of its students. This does not mean that the amount of improvement will be the same for each child. The entire program cannot be considered a failure if gains are slight in some cases. Many students will progress very little, while others will make rapid gains. Russell²⁰ says,

Remedial work is not getting all pupils 'up to grade' but providing adequate instruction for pupils who, for some reason or other, cannot benefit by the regular methods and materials used by most of the class. Remedial work is simply providing for individual pupils, each according to his need.

Remedial reading programs vary considerably. According to Bond,²¹ the truly successful remedial program is one

²⁰David H. Russell, Children Learn to Read, p. 330.

²¹Guy L. Bond, "How to Conduct a Remedial Reading Program," Improving Reading in the Junior High School, Bulletin 1957, No. 10, United States Government Printing Office, Washington, p. 108.

that does the following:

- a. Bases treatment on the pupil's specific needs as shown by a thorough diagnosis.
- b. Emphasizes a child's specific instructional needs in relationship to broad reading development--not in isolation.
- c. Is well organized.
- d. Makes the processes meaningful to the learner and lets him help plan the correction.
- e. Considers each pupil as a worthwhile individual.
- f. Is encouraging to the pupil.
- g. Uses material suitable for the pupil in difficulty, interest, and maturity.
- h. Is broad enough to treat all types of difficulties.
- i. Is flexible enough to change as the child's problem changes.
- j. Has teachers who are energetic, optimistic, and well trained.
- k. Employs good, sound teaching procedures and interesting reading materials rather than artificial or mechanical devices, or any other bag of tricks.

The present program under study has attempted to incorporate all of these qualities into the remedial program. A great deal of attention is devoted to the study of the individual student, diagnosing his reading deficiencies, and providing correctional instruction. Care is taken to create a favorable atmosphere for learning by establishing a pleasant, friendly rapport between the teacher and pupils. Each student is encouraged to take the initiative in improving his reading ability. These points will be explained in the following pages.

²⁴Gilbert B. Schiffman, "How to Organize a Remedial Reading Program," Improving Reading in the Junior High School, Bulletin No. 10, U. S. Government Printing Office, Washington, 1957, p. 113.

Selecting the pupils. Selecting the pupils to be given special help is a difficult task. Not all pupils who are below grade level will profit by a remedial program. Bond²² lists three kinds of retarded readers: first are the truly disabled readers who, for one reason or another, are not reading up to capacity--these are the ones who will profit by the program; second, there are those who are slow learners in everything and who are already reading to capacity; third, there are children who have major emotional problems--the program may or may not help them.

Lyons²³ defines "retarded reader" as any person who is not reading up to expected capacity. The slow learning student can be reading up to capacity and still be below grade level. A "corrective reader" is one or two years below capacity and could be provided for in the classroom. The "remedial reader" in need of remedial training is one who falls more than two years below capacity.

Schiffman²⁴ says the following types of students should not be referred to the reading specialist:

²²Bond, "How to Conduct," op. cit., p. 101.

²³Anita F. Lyons and Lillian E. Campbell, "Reading Programs for Retarded Readers of Average Ability," High School Journal, 39:112-117, November, 1955.

²⁴Gilbert B. Schiffman, "How to Organize a Remedial Reading Program," Improving Reading in the Junior High School, Bulletin No. 10, U. S. Government Printing Office, Washington, 1957, p. 113.

- a. Mentally retarded or very slow-learning students who are reading as well as students with their mental capacity can be expected to read.
- b. Students with average intelligence who are not reading quite as well as they might, but whose difference in achievement and capacity is not significant enough to request outside help.
- c. Students who have learning problems other than reading.
- d. Students who are disciplinary problems because of factors other than deficiencies in reading.

Herrick²⁵ lists four procedures which might be valuable for attacking the problem of selecting the child who would profit by specialized training in reading:

- 1. The disparity technique. This method compares the child's capacity for reading with his present success in reading and infers from comparison whether special reading is needed. A disparity in favor of mental age indicates the need for reading training.
- 2. The reading index. This method uses a combination of chronological age, mental age, and success in arithmetic.
- 3. The "split-growth" concept. Based on the theory that reading is as much an aspect of growth as height in inches, weight in pounds, dental age, and grip age. The "organismic age" is compared to the reading level.
- 4. The case-study method. Based on a completely individualized study of the child.

A variety of methods may be used to select pupils for the remedial classes according to Blair.²⁶ School

²⁵Virgil E. Herrick, "Selecting the Child in Need of Special Reading Instruction," Elementary School Journal, 40:424-434, February, 1940.

²⁶Blair, op. cit., p. 137.

records and teacher opinion are the most popular methods. Scores made on standardized reading tests are next, followed by intelligence tests. Some schools offer the course as an elective. Since the manner of selection influences the overall effectiveness of the program, the best method would be the one that restricts the enrollment to students who can profit by the remedial instruction.

The problem of selecting students who will benefit by remedial reading has not been adequately met in the present study. This is an area for improvement. The class is offered as an elective and the students take it for a variety of reasons. Some students simply enjoy reading and welcome the opportunity of having an additional reading class, and a few students take the course because they realize they are handicapped as poor readers and want to improve. Most of the students, however, are guided into the classes by the counselors on the basis of low reading achievement scores. As has been pointed out, many of these students already are reading up to capacity. A better screening method needs to be provided in the future.

Creating favorable attitudes. Much time is spent at the beginning of the course creating a pleasant atmosphere in the classroom. These are children who have failed to master the reading skills. They have seen their classmates

achieve greater success in every academic field. Some have become accustomed to failure and have resigned themselves to the fact that they cannot read as well as other students. They often feel that to try to improve their reading is a futile and inutile effort. These negative attitudes must be replaced by favorable ones before the remedial program can be effective.

The establishment of rapport between the teacher and pupil is very important. Boyd²⁷ calls it the first problem when she says,

The teacher must help the student accept himself and his problem, not as hopeless, but as something which he can overcome. He must understand what his trouble is without developing emotional disturbances over it, and must be willing to work on techniques to overcome it. This cannot be accomplished unless the teacher is understanding, sympathetic, and patient.

Perhaps the best argument for emphasizing a sympathetic classroom atmosphere is its effect on learning. If a student accepts a teacher, he will probably accept her guidance in the reading program. A report of the Association for Supervision and Curriculum Development²⁸ shows the relationship between rapport and learning:

²⁷Gertrude Boyd, Remedial Techniques for Reading Difficulties, p. 7.

²⁸Association for Supervision and Curriculum Development, Guidance in the Curriculum, p. 218.

Thus the teacher who guides as he teaches has a greater chance of finding a congenial reception for that which he is attempting to teach. Because such a teacher appreciates each pupil as a human being and knows something of his thoughts and feelings and of the problems he is struggling to resolve, the chances are that each child will actually learn the academic work better.

On the first day of class a favorable attitude is sought by discussing the need for reading improvement with the students. Leading questions are asked of the group: "Why do we need to read? What good will it do us? Does everyone read just alike?" The responses are given by the students. The teacher tries to draw out such answers as: "Reading will help us, we could make better grades, read more, and know more." Another topic for discussion on the first day is individual differences in reading. The teacher points out that a student need not be ashamed if he does not read as well and as fast as another. The Texas University Reading Improvement Program is used as an example to show how even people who are going to college are still concerned with improving their reading abilities. Much time is devoted to building a responsive attitude to reading.

Building self-confidence. Too often has the remedial student experienced defeat and discouragement. The feeling of frustration can be a formidable hinderance to reading improvement. The teacher tries to help the student build

confidence in himself and in his ability to learn. A positive approach of praise and encouragement is used to accomplish this. No one is made to feel inadequate, odd, or unusual because he cannot read well. The fact that there are other students having the same difficulties is often helpful in overcoming fears and prejudices against reading.

Jersild²⁹ emphasizes the effect of failure on the attitudes toward self. He says the attitude of self-acceptance includes confidence in self, a feeling of worthiness, accepting responsibilities, high regard for right of self, and an ability to get along with self. If the child is involved constantly in situations where failure is inevitable, he may soon come to regard himself as a failure.

Monroe and Backus³⁰ found that failure to read will affect the personality. They classify the personality reactions to reading disabilities into the following types:

Aggression: The child takes an aggressive opposition to the subject or person that has thwarted him.

Withdrawal: The child withdraws from the unpleasant and thwarting situation.

Compensation: The child compensates for his reading disability by success in some other field.

Defeat: The child gives up, defeated.

Hypertension: The child develops a general hypertension and excitability.

²⁹ Arthur T. Jersild, Child Psychology, p. 594.

³⁰ Monroe and Backus, op. cit., pp. 8-9.

The implication here indicates that a successful reading program does not only improve reading ability but also behavior patterns. The author finds this to be true in her situation. Very few discipline problems occur in the remedial classes.

One way to build confidence is through experiencing success. For the remedial reading student, the school work has been too difficult for several years. When reading material on his own level is given him, when suddenly he finds that he has something he can read and read well, something on which he can make a perfect grade, it gives him a feeling of success and achievement. As the teacher sees the joy and happiness exhibited over a good paper or score, she realizes what these children have faced through the years.

Traxler³¹ believes that the atmosphere in the remedial class is an important aspect of the program. There is a tendency in most schools, and particularly in remedial work, to create a relaxed and friendly classroom. He says progress will be more easily accomplished if stress and pressure are eliminated.

Short conferences with individual students help build confidence and improve attitudes. The teacher does everything possible to gain the trust and friendship of the

³¹Arthur E. Traxler, "Remedial Reading Today," School Review, 61:17-24, January, 1953.

children. One excellent way to do this is to talk with each student about his problems. The personal interest of the teacher is a motivating factor for the student who likes to feel that someone is interested in him and his reading progress. The conferences are informal and take place at the pupil's desk, in the hall, after school, or whenever there is time for a talk. The number of conferences per student depends on the class size. In a small class the teacher can talk to each student several times a week.

In the remedial classes of this study every effort is made to lessen pressure. There are no deadlines to meet, no rigid standards for which everyone must work. The teacher emphasizes at the beginning of the course that her final goal is not to have each student reading at the same level of achievement, but that each individual improve his own comprehension, speed, and vocabulary to the best of his ability. She tells them she will be just as proud of a little gain as of a large gain, provided that each student has done the very best that he can do.

The permissiveness thus far described does not mean the students are given free reign to waste time capriciously during the class. On the contrary, a definite program is outlined and every student is expected to participate in the reading activities. Much of the class period is available

for individual work. The teacher is firm in her requirement that the students not waste the time in idleness or in disturbing others. The students soon learn that the reading class is not a play period; enjoyable--yes, but it is the type of joy that comes from profitable work.

A remedial teacher has many obstacles to overcome. Her students probably have had excellent teachers in the lower grades, yet they have failed to master the techniques of reading. The responsibility of doing what has not been accomplished in the past is a great one. There will be times of discouragement and depression. Lee³² offers encouragement to remedial teachers by saying that the happiness of the children over any small accomplishment in reading is "most gratifying to the teacher." She says the personality adjustments made by most students is a morale builder for the teacher.

Study of the students. McCallister³³ says the basic causes of reading retardation can seldom be determined from an analysis of the deficiencies alone. To get to the fundamental reasons and causes, the reading teacher must study

³²Lee, op. cit., p. 72.

³³James M. McCallister, Remedial and Corrective Instruction in Reading, p. 31.

all of the conditioning factors in the school history, home environment, social contacts, health status and physical history, mental ability, and personality traits of the individual child. Insufficient time is a factor in gathering the data. "When a systematic survey is impracticable, the alert teacher may discover items of significance in the course of her usual contacts with pupils, parents, and school records."

On the first day of class each student is given a questionnaire to fill out. Personal data is asked for: birth date, address, parents' names, siblings in the home, favorite recreations, favorite reading material, and other like information. The teacher reads aloud each question in case there are total non-readers in the group. Later these questionnaires are studied carefully by the teacher. The information which is given will be a basis for understanding the student and for diagnostic purposes.

Physical health, or lack of it, can be a detriment to learning. Normal good health must exist for a child to benefit fully from his school experiences. Davis³⁴ states:

Serious physical defects may impede progress of normal physical and mental development. Evidence that physical defects are interfering with normal growth is indicated when a child is listless,

³⁴Robert A. Davis, Educational Psychology, p. 31.

irritable, lacking in interest and enthusiasm, or unable to concentrate. He may be easily fatigued, readily discouraged, or inclined to asocial behavior. In such cases, medical examination may reveal malnutrition, weakness of kidneys or heart, or some disease such as asthma, goiter, or tuberculosis. Decayed teeth may be poisoning his system or interfering with digestion.

Since the total enrollment in the remedial reading classes is large, the teacher does not attempt to gather physical data on each student. However, she is on the alert for any signs of physical anomalies. She watches for children who squint, rub their eyes, or exhibit other signs of eye trouble. Evidence of loss of hearing, of malnutrition, and of disease is noted. If the teacher suspects physical anomalies, she consults the school nurse who has their health files on record. If the files do not supply sufficient information, she asks that special examinations be given.

Often help can be secured for those who need it. If, for example, a pupil is found to have defective eyesight and his family cannot afford to buy him glasses, he may be referred to the service clubs who provide free glasses to school children. The effect of health on the skill of reading is a valid reason for taking time to investigate evidences of ill-health.

The affect of visual maladjustments on reading has

been studied by Robinson.³⁵ She lists several possible defects that might be causal factors in retarded reading ability.

Visual acuity, the sharpness or keenness of vision, is measured from a distance of twenty feet. The Snellen chart is used in most schools. One eye is covered while the child reads the letters of varying size on the chart. Research provides evidence that gross measures of visual acuity do not differentiate between good readers and poor readers.

A second visual factor to consider is known as "refractive error," a condition caused when rays of light entering the eye do not converge properly. These refractive errors include hyperopia, or farsightedness; myopia, or nearsightedness; and astigmatism, or blurring of the image. Findings indicate that hyperopia can be a serious hinderance of reading and that glasses sometimes lead to reading improvement. Research indicates that myopia is probably not a cause of poor reading and may even be an asset. However, care should be taken to seat the myopic child near the blackboard. Astigmatism is not closely associated with poor

³⁵ Helen Mansfield Robinson, Why Pupils Fail in Reading, p. 12.

reading except in extreme cases, then it might be a serious handicap.³⁶

Eye co-ordination is the ability to direct the two eyes on the same object at the same time, so that a single impression is obtained. A teacher will hear children complain of blurring, seeing double, or tired eyes, all of which may be the results of an inability to see an object singly. Fernald³⁷ thinks reading may overcome some of these difficulties. She says that as reading skill develops, the eye adjustments may become normal and all evidence of fatigue disappear. Robinson³⁸ concludes her study by saying all of the evidence is very conflicting and that the reading teacher should have professional advice and help with cases of extreme visual maladjustments. Several students in the present study have been referred to the school nurse who sent them to an optometrist for eye examinations. Glasses were provided for two students.

The remedial reading teacher soon learns a great deal about her students. The very nature of the program

³⁶Ibid., p. 15.

³⁷Grace M. Fernald, Remedial Techniques in Basic School Subjects, p. 177.

³⁸Robinson, op. cit., p. 24.

lends itself to the study of the individual child. Helping the child daily with his reading problems gives ample time for child study.

Diagnosis. The importance of diagnosis in the improvement of reading is verified by the leading authorities in the field. Bond³⁹ says:

Uniform remedial procedures, be they ever so ingenious, have little merit in solving the reading problems of disabled readers, no two of whom are exactly alike. It is only when we recognize that remedial programs must be based on diagnosis, and methods varied as indicated, that successful growth for all disabled readers will occur.

Pitkanen⁴⁰ says:

In spite of the difficulties a specialized handling of the nonreading pupils presents and the failures of past attempts to show improvement or even tangible indications of success, remedial teaching is coming into its own. Understanding, dedicated teachers consider it far more than a special technique of instruction. It is instruction based on diagnosis--a continuous diagnosis inseparable from the instruction.

In the writer's classes, diagnostic procedures begin early. Included in the questionnaire given to the students on the first day of school is a section containing questions about what the student feels is his remedial problem. This

³⁹Bond, op. cit., p. 104.

⁴⁰Allan M. Pitkanen, "Diagnostic Instruction in Remedial Reading Classes," The Clearing House, 32:487-491, April, 1958.

is the beginning of the diagnosis. The questions are simple, such as: "Do you move your lips when reading? Do you have difficulty recognizing new words? Do you point at the words with your finger?" These are questions designed to help the student recognize his possible deficiency in reading. Often the answers prove valuable in the teacher's diagnosis. Throughout the program, pupils are encouraged to recognize and face their reading problems.

As soon as possible, the reading scores from the previous year's achievement tests are recorded. The students in the eighth grade who were in Junior High the year before will have had the same achievement test. The seventh graders come into Junior High school from six different elementary schools. The tests administered to the sixth graders are not all the same. The scores, vocabulary, comprehension, and speed on the seventh grade test are placed in the teacher's record book for easy reference.

The diagnostic test in the Basic Reading Skills workbook is given to the students early in the course. From it, the teacher is able to diagnose the more specific reading deficiencies in word attack skills. The test covers the skills used in word recognition. Vowel sounds, dividing words into syllables, crossing out silent letters, and recognizing prefixes and suffixes are included. It also tests the use of the dictionary and the ability to note details, see

ideas, and draw inferences. The teacher grades each test and begins to formulate a possible diagnosis. At this stage its unwise to draw definite conclusions. However, scores that seem to indicate a weakness are set down in writing for future reference.

Less formal than the written examination, but perhaps more revealing, is the informal method of having each student read aloud to the teacher while she checks the type of difficulty he exhibits. This check is done as soon as the class has settled down to individual work. If the class has under twenty-five students, the teacher asks the students to read to her privately. In a larger class, this is done as a class lesson and the students read aloud one by one. For the oral check, the Gates⁴¹ Oral Reading test is used because the paragraphs are of graded difficulty. The results can be used as a check on the validity of grade level as determined by the achievement tests. The test consists of seven paragraphs arranged in a series of increasing difficulty. A check list of errors is used to record the difficulties exhibited in oral reading.

For silent reading a check list based on one developed in the Alton, Illinois⁴² schools is used. Space is

⁴¹Gates, op. cit., p. 588.

⁴²Alton, Illinois, A Study on Remedial Reading, Course of Study, No. 11, 1952, p. 31.

provided for the teacher to check the difficulty and to comment on it if she wishes. Comprehension in silent reading includes: ability to alphabetize, to use the dictionary, to use the encyclopedia, to use the library, to skim, to follow directions, to locate central thought, and to recall detail. Mannerisms such as pointing with a finger, throat articulation, moving lips, moving head, and spelling words aloud can be checked. The teacher fills in these check lists from the results of reading tests and from observation.

McCallister⁴³ divides the reading deficiencies disclosed by his case studies into three types. First are deficiencies in comprehension and interpretation. Here are the slow laborious readers, the inaccurate readers who read fairly well but have little comprehension, and the readers who can repeat the thought but are unable to use it in thinking procedures. Secondly, there are those deficiencies in the rate of reading. Last, he lists deficiencies in fundamental habits of recognition. This area includes regressive eye movements, narrow eye span, irregular rhythm, and vocalization.

Wheeler and Wheeler⁴⁴ have made a study of dyslexaphoria, a tendency toward linguistic associative

⁴³McCallister, op. cit., p. 36.

⁴⁴Lester R. Wheeler and Viola D. Wheeler, "Dyslexaphoria: Symptoms and Remedial Suggestions," Elementary English, 32:305-312, May, 1955.

difficulties. One type affects the mechanism of reading and is due to defective or undeveloped perceptual imagery or mental impressions. Another type is related to interpretative aspects and practical implications of reading. This type is due to a lack of ability to relate the information acquired in reading to personal ideas and experiences with the ideas on the printed page. The extreme form of dyslexaphoria is called dyslexia. Fortunately the true dyslexiac, or so called "non-reader," is seldom found. Only a fraction of one per cent of the school population is dyslexiac.

After the types of reading difficulties have been determined, the teacher attempts to tie together what is known about the child and how it affects his reading ability. Knowing the cause of a reading anomaly often indicates the type of remedial instruction which should be given.

Spache⁴⁵ says there is a lack of integration between diagnosis and remedial procedures although advances have been made in the last twenty-five years. One reason for this is biased or prejudiced thinking that results in

⁴⁵George D. Spache, "Integrating Diagnosis with Remediation in Reading," Elementary School Journal, 55:18-28, September, 1955.

limited diagnostic effort or in stereotyped remedial programs.

Instruction. A remedial reading program demands many and varied materials to fit the individual needs of all the students. The author is fortunate in that the school has provided abundant material for the class. In the belief that it is possible to have too many instructional tools for thorough coverage, other items are being added slowly and with careful consideration. Classroom material includes:

SRA Reading Laboratory, Science Research Associates,
Let's Read, Book 1 and 2, Murphy, Miller & Murphy.
Basic Reading Skills for Junior High School,
 Scott, Foresman and Co.
Better Reading Books, 1, 2, 3. Science Research
 Associates.
Reading for Meaning, Grades 6, 7, 8. J. B. Lippin-
 cott Company.
Standard Test Lessons in Reading, McCall-Crabs.
Reader's Digest, old copies.
 Other magazines.
 Dolch's Pleasure Reading Series, 16 books.
 Dolch's word games: Consonant Lotto, Vowel Lotto,
 Word Bingo.
 Several sets of out-of-adoption reading textbooks.
 Set of dictionaries.
 Word Wheels--teacher made.
 Flash Cards--teacher made.

Instruction falls into two categories, group instruction and individual instruction. The schedule allows time for each type. Gates⁴⁶ says that although remedial work is

⁴⁶Gates, op. cit., p. 131.

individualized, cooperative group techniques are also desirable:

Remedial work demands that much attention be given to the individual case. This does not mean, however, that the pupil must do all his work apart from other pupils. Indeed, there are certain advantages in having several pupils work together at times.

Traxler⁴⁷ calls the group techniques "corrective reading" and divides them into two general classes: (1) pupils whose reading difficulties seriously handicap them in the basic reading skills; (2) pupils whose difficulties are corrective and who will respond to group treatment. Since the last group is larger, Traxler finds it advisable to try corrective teaching, or group procedures.

The writer feels that the interchange of ideas in group discussions, the comradeship of doing and reading together, and the opportunities for group instruction in the fundamental reading skills justifies the designation of two days a week to group work.

At the beginning of the period on Tuesday, a discussion is held on the various study-type skills. The students are encouraged to give their own ideas and methods of performing the skills discussed. The topics are based on

⁴⁷ Arthur E. Traxler, The Teaching of Corrective Reading in the Junior and Senior High Schools, p. 6.

Simpson's⁴⁸ suggestions but may be changed at any time. Her list is:

- How to schedule your study time.
- How to read a textbook chapter.
- How to take notes and make an outline.
- How to keep a notebook.
- How to study for a test.
- How to read for an oral report.
- How to browse in the library.
- How to prepare a book report.
- How to use an encyclopedia.
- How to analyze propaganda.
- How to read aloud.
- How to read to prepare a written paper.
- How to use the dictionary.
- How to read a magazine.
- How to read pictures.
- How to use an almanac.
- How to read difficult materials.

The discussion usually lasts about fifteen minutes. The remainder of Tuesday's class period is devoted to the Basic Reading Skills workbook. The class is assigned a lesson in the book. The lessons are repetitious of reading skills taught in the lower grades and are simple enough that only a very few of the poorer students will be unable to do them. The work is corrected orally in class.

One day a week the group as a whole reads, works the exercises, and discusses the lessons in the Let's Read textbooks. Seventh grade uses Book I and eighth grade uses Book II. After reading the story silently, the students

⁴⁸Elizabeth A. Simpson, Helping High-School Students Read Better, p. 26.

discuss the plot, the details, and the ideas together. These are timed reading lessons. The number of words read per minute is recorded on a chart along with the grade made on the exercises. By charting his progress, each student can see the improvement he makes in speed and comprehension.

The base of this remedial program is the SRA Reading Laboratory. It is designed to fit the individual needs of students reading at any level between third and twelfth grade. Each of the fifteen reading lessons at each grade level contains exercises in comprehension, word study, and vocabulary. The Laboratory, after the first week, is student-operated, leaving the teacher free to work with individual pupils on special needs. When a student becomes proficient at one level he moves on to the next. Charts are used to record progress in understanding and word study.

Reading with a purpose in mind is stressed throughout the course. The SQ3R method--survey, question, read, review, and recite--is used since it is included in the SRA Reading Laboratory. The student is shown how his purpose in reading will determine how he reads and the rate at which he reads. Driving a car--a subject which greatly interests most Junior High students--is used as an example. A person does not start driving unless he intends to go someplace, and he certainly does not drive all the way at the same rate of speed. The students readily understand

this parallelism.

As was stated, the SRA Reading Laboratory is the base of the program, but not to the extent that all other remedial techniques are discarded. On the contrary, many other exercises are provided to remedy individual deficiencies. Several hundred worksheets on all levels are kept in a file in the room. These include the Lippincott, McCall-Crabs, and other workbook exercises which have been mounted on cards. Mineographed lessons are also utilized.

Most reading disorders will fall into three main categories, comprehension, speed, and vocabulary. The Texas Education Agency's⁴⁹ summaries of the methods to improve these areas have been very helpful to the teacher.

For low comprehension, they suggest:

1. Fit materials to level of reading achievement.
2. See that material selected is high in interest.
3. Encourage student's understanding of purpose and need.
4. Train to read for specific purpose.
5. Practice selections followed by tests of comprehension.
6. Increase speed as an aid to comprehension and develop a sense of appropriate speed for different types of materials.
7. Give as much real experience as is possible.
8. Develop meaningful vocabulary.
9. Develop skill in reading in thought units.
10. Develop the habit of seeing the author's pattern of writing.

⁴⁹ Texas Education Agency, The Improvement of Reading in Secondary Schools, pp. 47-48.

11. Practice use of recall.
12. Emphasize use of mechanical aids such as paragraph headings and italicized words.

While speed is an important factor in improving reading, speed in itself is not essential. The rate of reading must be adjusted to what is being read and to the purpose of reading. To improve rate, the SRA speed tests are given to the students at regular intervals. Also, the timing of the Let's Read stories helps in improving the rate of speed. Other methods are suggested by the Texas Education Agency:⁵⁰

1. Fit reading materials to level of reading achievement.
2. Emphasize the necessity of changing rate with change of purpose and type of material.
3. Give aid in vocabulary.
4. Teach good skimming techniques.
5. Teach paragraph patterns for quick recognition of form.
6. Give specific practice in reading from various fields.
7. Use speeded exercises for practice.
8. Keep record of speed from day to day.
9. Encourage much wide reading.
10. Create interest in what is to be read.
11. Eliminate articulation, head movements, pointing, etc.
12. Eliminate regressive eye movements.
13. Give aid in mechanics of reading.
14. Use tachistoscopic.
15. Use pacer devices.

⁵⁰ Ibid., p. 47.

For a lack of vocabulary, these methods are suggested by the Agency:⁵¹

1. Encourage much wide reading.
2. Encourage the study of unknown words in natural reading situations.
3. Teach the use of context clues.
4. Have records made of new words learned.
5. Encourage playing games with new words.
6. Encourage the creation of new games using new words.
7. Stimulate interest in the story, origin, and history of words.
8. Study the meanings of common prefixes, suffixes, and roots.
9. Practice new words in many oral and written situations.
10. Study shades of meaning and implied meaning.
11. Practice exercises which require use of new words.
12. Use objective teaching, real-life experiences, and visual aids.

The students have a free reading period on Fridays. They may read any book in the room or may bring a book to class with them. Sometimes the class will play word bingo for half the period, then read the last half.

The schedule outlined in this chapter is used only as a guide and is changed as needed. At different times during the year, the students have made scrapbooks and posters, given book reports, read stories, plays, and poetry aloud, brought and studied newspapers in class, had vocabulary studies, and conducted oral spelling bees.

⁵¹Ibid., p. 48.

This chapter has attempted to describe the remedial reading program of this study. Special emphasis is placed on the study of the individual students, on diagnosing their reading needs, and on corrective and remedial instruction. The results of this program will be discussed in a later chapter.

The statistical analysis. The reading scores of the remedial reading students, as listed on Standardized Tests, will be compared with scores from the permanent records of the previous year. Scores of scores of this comparison will be compared with the scores of scores of other groups. The details of the process involved is presented as a guide for understanding the conclusions which will be drawn in a later chapter.

Grouping. Six groups of students are used in the analysis. Three of the groups are students enrolled in the reading classes of the school. The other three groups were chosen at random from the eighth grade. Each group will be described below.

Group I contains students from the two seventh grade remedial reading classes. One class started the semester with twenty-two students and later gained eight more late-entry students. The other class started with twenty and ended with thirty students. Of the sixty enrolled in the two classes, eighteen students were eliminated from the list

CHAPTER III

THE STATISTICAL ANALYSIS

Introduction. The purpose of this chapter is to describe the statistical methods utilized in the study. This includes the method of testing, the preparation of the data, and the statistical analysis. The reading scores of the remedial reading students, as based on Standardized Tests, will be compared with scores taken from the permanent records of the previous year. Gains or losses shown by this comparison will be compared with like gains or losses made by other groups. The detailed explanation of the process involved is presented as a prerequisite for understanding the conclusions which will be drawn in a later chapter.

Groups. Six groups of students are used in the analysis. Three of the groups were students enrolled in the reading classes of the author. The other three groups were chosen at random from the eighth grade. Each group will be described below.

Group I contains students from the two seventh grade remedial reading classes. One class started the semester with twenty-two students and later gained eight more late-entry students. The other class started with twenty and ended with thirty students. Of the sixty enrolled in the two classes, eighteen students were eliminated from the list

because of incomplete scores or because they were in class only a few weeks. Forty-two students with complete scores remained to form Group I.

Group II contains students from the two eighth-grade remedial reading classes. One class began with twenty-five students and ended the semester with forty-two enrolled. The other class grew from twenty to twenty-seven enrolled. Of the sixty-nine total, twenty-nine students were eliminated because of incomplete scores from the previous year or because they were in class only a short time. The forty remaining students from both classes have been combined into Group II.

Group III is an eighth-grade class called Reading Skills. It, too, is an elective and is taught by the writer. Most of the students in this class are not retarded readers but have average or above reading level scores. The one student who was a late-entry was not included because he had no score from last year. The twenty-five students who compose Group III were enrolled the full time and did have reading scores from last year.

Group IV is an eighth-grade high section. The school is grouped into four types, accelerated, high, low, and average. The grouping is based primarily on teachers' opinion and secondly on achievement scores in all subjects. As will be seen later, there is a wide range of reading

achievement in this one class. Thirty-four of the students had complete scores.

Group V is an eighth-grade class classified as average. Thirty-five of these students had complete scores and were used in the analysis.

Group VI is composed of an eighth-grade low group. Many students in this class belong to migratory families and were not in school the year before when the end of the year achievement tests were given. As a result of missing scores, only twenty-two students are included in Group VI.

Groups IV, V, and VI were chosen to be in the study because none of the students were taking remedial reading at the time. The reason no seventh-grade classes were chosen for comparison was because the test that was administered to all six groups is to be given to the seventh-grade students at the end of the current year. The counselor, who is in charge of the testing program, thought it best not to give the test to too many of the seventh-grade students.

Tests. The Metropolitan Achievement Tests were administered school-wide during May of 1960. The Advanced Battery Form was given in Junior High school. The subtests were reading, vocabulary, arithmetic fundamentals, arithmetic problems, English, literature, geography, history and civics, science, and spelling. The Advanced Battery covers grades

seven, eight, and nine. Reading scores used in this analysis combine the reading and vocabulary subtests into one total score.

The 1960 spring testing program was directed and administered by the Junior High School counselor with the help of several teachers. Large groups of students were given the test in the auditorium. The entire battery took all day to complete. The testing situation is described here because of the possible influence on test scores. The test situation for the second score used in the present analysis was different.

The second test score comes from tests administered to the six groups at the end of the first semester of the current 1960-61 school year. On January 10, 1961, the Metropolitan Advanced Reading Test containing subtests of reading and vocabulary was taken by the remedial reading students. Three weeks later, the other three groups took the same test. The test was a different form of the Metropolitan Achievement Test. The tests were administered in the classroom by the teacher and took one hour to complete.

One other test score to be utilized in the analysis is the stanine scores derived from a school-wide testing program administered in October, 1960. The Pupil Record of Educational Progress battery, commonly called Prep, was designed to provide measures of educational development in

English, mathematics, social studies, and science. The stanine scores are a composite of the four tests. The testing situation was similar to the one described for the May achievements tests. The results of the Prep tests are included in this analysis in order to determine the general ability in several fields of the students in the six groups.

Other tests were taken at various times during the semester to provide a check on progress. The Nelson Silent reading test was given at the end of the first six weeks and the Gates Reading Survey at the end of the second six weeks. The results of these tests were encouraging to students and teacher but were not included in the present study because of the differences in the tests.

Preparation of data. The remedial reading students' scores of the previous year were taken from the permanent record files early in the school year. The information is helpful in diagnosing the students' needs in reading. When the writer began compiling the data for this study, the information was already in her records.

After testing Groups IV, V, and VI, the writer, aided by the counselor, went through the permanent record files and recorded the last year's scores and the Prep stanines for these students.

Alphabetical lists of the six groups were then made. Beside each student's name was recorded his Prep stanine, his last year's score, and the score from the last test. Appendix A shows the three scores of each student in the six groups. Groups IV, V, and VI, although homogeneously grouped, contain a wide range of reading level scores.

Statistics. All three scores of the six groups were then classified into a frequency distribution. Tables I and II show the frequencies for each grade level for the May, 1960 test and for the January, 1961 test. The statistics regarding the stanine scores will be described and discussed later.

A great deal can be learned from the condensed data shown on the frequency tables. However another step is necessary to analyze and interpret the scores. The highest frequencies will usually fall near the center of the distributions of scores. Measures of central tendency are used to find the point on the scale where the most distributions occur. These measures are a more accurate method of finding the average score.

In the present study, both the median and the mean were computed. The mean proved to be the more exact method of calculation. For this reason, the statistics regarding median are eliminated from this study.

TABLE I

FREQUENCIES OF SCORES OF SIX GROUPS OF PUPILS MAY 1960 METROPOLITAN ACHIEVEMENT
TEST

Score	Group I f	Group II f	Group III f	Group IV f	Group V f	Group VI f	Total f
10.0 - 10.4			3	3			6
9.5 - 9.9			2	7		1	10
9.0 - 9.4		1	6	2	1		10
8.5 - 8.9			2	7			9
8.0 - 8.4			2	3			6
7.5 - 7.9			1	1			3
7.0 - 7.4	1	2	4	5	3		15
6.5 - 6.9		1		2	1	1	5
6.0 - 6.4	6	8		3	7	2	23
5.5 - 5.9	10	3	2		6	4	19
5.0 - 5.4	8	8	1	1	8	3	31
4.5 - 4.9		7	1		6	4	26
4.0 - 4.4		1	1			4	21
3.5 - 3.9	7	1			1	1	10
3.0 - 3.4	1	1				2	4
N	42	40	25	34	35	22	198

TABLE II
FREQUENCIES OF SCORES OF SIX GROUPS OF PUPILS JANUARY 1961 METROPOLITAN
ACHIEVEMENT TEST

Score	Group I f	Group II f	Group III f	Group IV f	Group V f	Group VI f	Total f
10.0 - 10.4		1	9	7			10
9.5 - 9.9		1	2	2			10
9.0 - 9.4			3	1	1	1	5
8.5 - 8.9			3	3		1	6
8.0 - 8.4			2	4		1	6
7.5 - 7.9	1	1	1	4			7
7.0 - 7.4		1	1	4	1		7
6.5 - 6.9	1	3		4	2		10
6.0 - 6.4	2	4		4	3		15
5.5 - 5.9	7	1	1	6	5		28
5.0 - 5.4	8	8	2	3	11	4	27
4.5 - 4.9	1	5	1		5	5	33
4.0 - 4.4	8	3			1	3	19
3.5 - 3.9	4	2				6	13
3.0 - 3.4						2	2
N	42	40	25	34	35	22	198

The means of the May, 1960 test and the January, 1961 test were found for each group. These figures are shown in Table III. The difference was found between the first test and the second test to determine the resulting gains or losses in reading grade level made during the four and a half month period. Group I gained two months, Group II gained three months, Group III gained six months, Group IV lost eight months, Group V lost five months, and Group VI lost eight months.

The method chosen to check the variability of the means is standard deviation. To facilitate computation of the standard deviation for the eighth grade, a frequency table was made for the five eighth-grade groups. Group I, or the seventh grade, was omitted in this analysis because of lack of similitude between the two grade levels.

Using the frequency tabulations, as shown in Table IV, the standard deviation was found for the two tests. The standard deviation was 1.8 for the first test taken in May, 1960 and 2.0 for the second test taken in January, 1961.

The frequency distributions of scores made by all the eighth-grade students were utilized in making a polygon chart. See Table V.

A mean was computed from the frequencies in Table IV. The mean for these eighth-grade students on the May, 1960, test was 6.5. On the January, 1961, test, it was 6.4, a

TABLE III

GROUP MEANS FOR THE MAY, 1960 AND JANUARY, 1961 METROPOLITAN
ACHIEVEMENT TESTS AND RESULTING GAINS OR LOSSES
IN READING LEVEL

	Means for May 1960 Tests	Means for January 1961 Test	Gains- Losses
Group I	4.8	5.0	.2
Group II	5.3	5.6	.3
Group III	8.1	8.7	.6
Group IV	8.5	7.7	-.8
Group V	5.8	5.3	-.5
Group VI	5.1	4.3	-.8

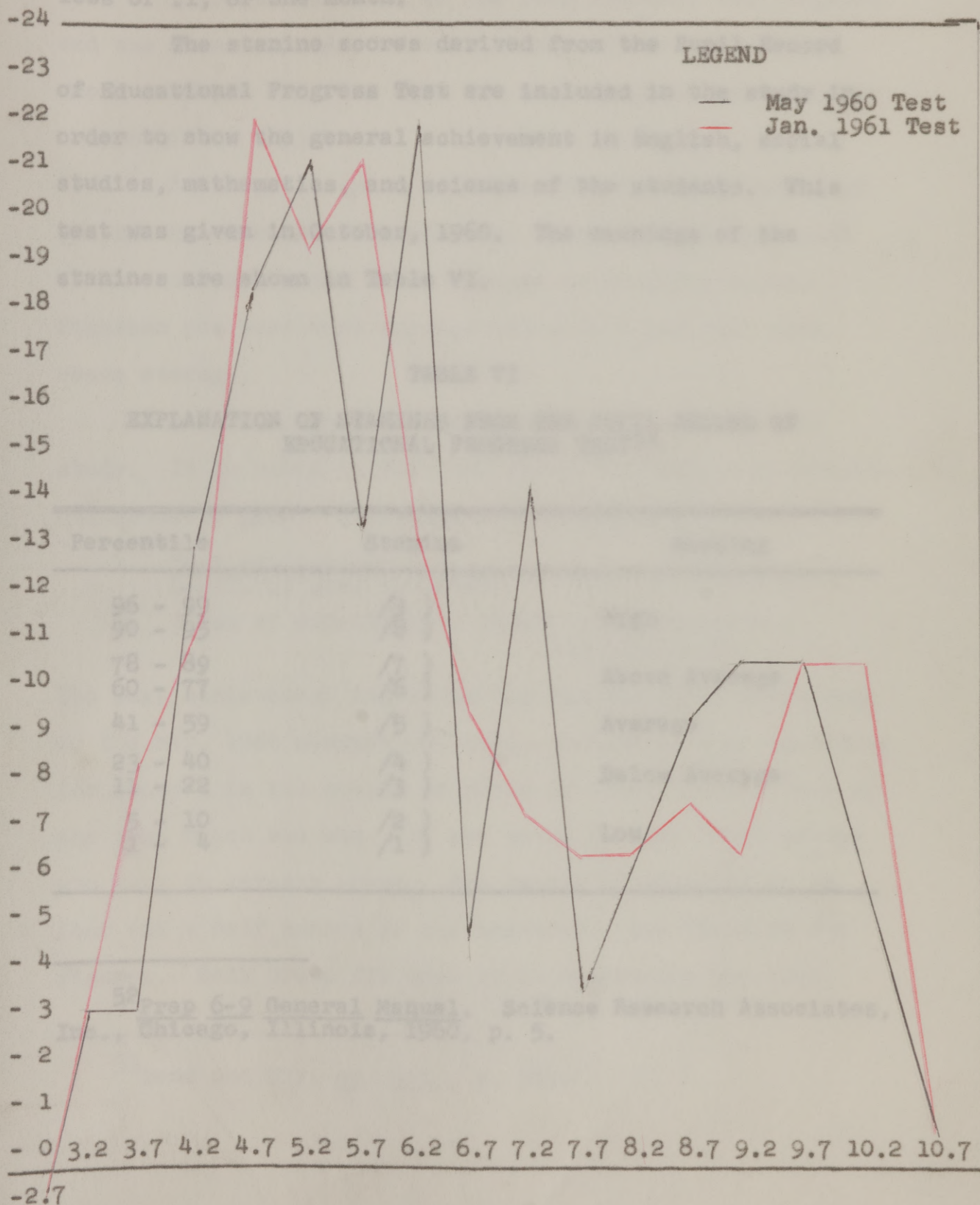
TABLE IV

FREQUENCY DISTRIBUTION OF SCORES OF EIGHTH GRADERS ON MAY, 1960 AND
JANUARY, 1961 METROPOLITAN ACHIEVEMENT TESTS

Limits	May 1960 Test				January 1961 Test			
	f	d	fd	dx(fd)	f	d	fd	dx(fd)
10.0 - 10.4	6	+6	36	216	10	+6	60	360
9.5 - 9.9	10	+5	50	250	10	+5	50	250
9.0 - 9.4	10	+4	40	160	5	+4	20	80
8.5 - 8.9	9	+3	27	27	6	+3	18	54
8.0 - 8.4	6	+2	12	24	6	+2	12	24
7.5 - 7.9	3	+1	3	3	6	+1	6	6
7.0 - 7.4	14	0	0	0	7	0	0	0
6.5 - 6.9	5	-1	-6	5	9	-1	-9	9
6.0 - 6.4	22	-2	-44	88	13	-2	-26	52
5.5 - 5.9	13	-3	-39	117	21	-3	-63	189
5.0 - 5.4	21	-4	-84	336	19	-4	-76	304
4.5 - 4.9	18	-5	-90	450	22	-5	-110	550
4.0 - 4.4	13	-6	-78	468	11	-6	-66	396
3.5 - 3.9	3	-7	-21	147	8	-7	-56	392
3.0 - 3.4	3	-8	-24	192	3	-8	-24	192
	N=156		-218	2483	N=156		-264	2858

TABLE V

POLYGONS REPRESENTING FREQUENCIES OF SCORES ON METROPOLITAN
ACHIEVEMENT TESTS MADE BY EIGHTH-GRADE STUDENTS



loss of .1, or one month.

The stanine scores derived from the Pupil Record of Educational Progress Test are included in the study in order to show the general achievement in English, social studies, mathematics, and science of the students. This test was given in October, 1960. The meanings of the stanines are shown in Table VI.

TABLE VI

EXPLANATION OF STANINES FROM THE PUPIL RECORD OF
EDUCATIONAL PROGRESS TEST⁵²

Percentile	Stanine	Meaning
96 - 99	/9 }	High
90 - 95	/8 }	
78 - 89	/7 }	Above Average
60 - 77	/6 }	
41 - 59	/5 }	Average
23 - 40	/4 }	Below Average
11 - 22	/3 }	
5 - 10	/2 }	Low
1 - 4	/1 }	

⁵²Prep 6-9 General Manual. Science Research Associates, Inc., Chicago, Illinois, 1960, p. 5.

A frequency table of the Prep stanines was prepared and the mean computed for each group. These figures are shown in Table VII. The mean for each group is shown at the bottom of the table.

A bar graph shows in Table VIII the Prep levels of the two remedial reading classes. Seventy-eight per cent of the students rated below average on national norms. Eighteen per cent were average and only 4 per cent were above average.

One other method of comparison was used in this study. It is based on Bond and Fay's⁵³ formula for estimating probable gain. Two steps are followed:

1.
$$\frac{\text{Past achievement}}{\text{Length of time in school}} = \text{Index of expectancy}$$
2.
$$\text{Index of expectancy} \times \text{length of instruction} = \text{expected gain}$$

The past achievement figure is the reading level score made on the May, 1960 achievement test. Length of time in school for Group I is the number of years in school at the time of the test which was six. It was seven for the other groups who were in seventh grade. The length of instruction is four and a half months or one semester. See Table IX for figures. Only Group III came up to expectancy and over.

⁵³Bond and Fay, op. cit., p. 389.

TABLE VII

FREQUENCY DISTRIBUTION OF STANINE SCORES FROM THE PUPIL RECORD OF
EDUCATIONAL PROGRESS TEST OF THE SIX GROUPS

Limits	Group I	Group II	Group III	Group IV	Group V	Group VI	Totals
9.0 - 9.9			3				3
8.0 - 8.9			2	3			5
7.0 - 7.9			7	5			12
6.0 - 6.9		2	4	15		1	29
5.0 - 5.9	1	10	3	11		1	43
4.0 - 4.9	5	10	3		6		44
3.0 - 3.9	13	10	3		11	7	47
2.0 - 2.9	22	13	3		5	4	9
1.0 - 1.9	1	2				6	6
		3				3	
Totals	42	40	25	34	35	22	198
Means	M=4.1	M=4.2	M=6.6	M=6.5	M=6.0	M=3.5	

TABLE VIII
PREP STANINE RANK OF 7TH AND 8TH REMEDIAL READING STUDENTS
BAR GRAPH

Percentile	Stanine	Meaning	f
96-99	/9 }	High	
90-95	/8 }		
78-89	/7 }	Above Average {	3
60-77	/6 }		XXX
41-59	/5 }	Average	15
23-40	/4 }		XXXXXXXXXXXXXXXXXXXX
11-22	/3 }	Below Average {	23
			XXXXXXXXXXXXXXXXXXXX
5-10	/2 }		XXXXXXXXXXXX
1-4	/1 }	Low	4
			XXXX

TABLE IX

EXPECTED GAIN CONTRASTED WITH ACTUAL GAIN IN READING LEVEL
MADE BY SIX GROUPS

Group	Computation	Expected Gain	Actual Gain
I	$.8 \times .45 = .360 = .4$	.4	.2
II	$.8 \times .45 = .360 = .4$	.4	.3
III	$1.1 \times .45 = .495 = .5$	.5	.6
IV	$1.2 \times .45 = .540 = .5$	.5	-.8
V	$.8 \times .45 = .360 = .4$	.4	-.5
VI	$.7 \times .45 = .315 = .3$	.3	-.8

Analysis. The data presented in the preceding pages reveal certain discrepancies in the test results. The losses made by Groups IV, V, and VI are inconsistent with what was expected. These groups, by reasonable expectations, should have made a normal gain of about four or five months in reading level. Instead of this, there was a loss of several months. The slight gains made by the remedial Groups I and II are lower than expected in classes of this type. Group III, the reading skills groups, made a better showing but the gain still is inconsequential.

A possible explanation for the poor and probably inaccurate results will be attempted by the writer. An effort will be made not to rationalize a poor showing of the students to assuage the conscience of the teacher, but to offer a reasonable hypothesis for the results of the comparison.

In the case of the remedial reading groups, several factors should be considered. This year the classes were very large. One class this year had forty-two students during the peak load month. The teacher was not able to give each student as much individual attention as she should have. However, the students cooperated wonderfully in spite of the crowded conditions and worked very hard.

A second factor is that of selecting the students to receive the instruction. Many of the students placed in the classes are already reading up to capacity and are doing as

well as they can be expected to do. Table VIII shows the high percentage of the remedial reading students who are low achievers in all of their school work. Another factor to consider is the language handicap of the Latin American children. Most of the students are Latin American and do have this problem. They speak Spanish more fluently than they do English. In fact, English is a second language to them.

The same factors mentioned for the remedial groups apply also to the other three control groups. In addition, those students did not have the same incentive that the first three groups had. The remedial students were told that their scores would be compared to see if they had gained in reading ability. The control groups lacked encouragement and motivation for taking the test. This is probably the most important reason why Groups IV, V, and VI experienced a loss in the comparison. In the May, 1960 test, the psychological effect of a big testing day in the auditorium may have spurred the students on to greater achievement. The January, 1961 test, which was given in the classroom, was just another test to them.

This writer does not purpose to question the reliability of the standardized test except as it applies to the present situation. The test administered in the school is

the Metropolitan Achievement Tests. Dr. Hildreth⁵⁴ explains reliability in the test manual thus:

Many factors affect reliability. The length of the test, the validity of the items, the particular situation, the control of administrative conditions, and the attitude of pupils toward the test are just a few of the factors which may affect reliability. Ideally, it would be desirable to compute a reliability coefficient for each community.

The form used in the second test, although supposedly equal in difficulty, may have been unsuitable for this particular region.

Teacher evaluation of pupil growth. The key to a successful reading program is individualized teaching. Each student is an important participant in the remedial class. Therefore, a further analysis of the present study, based on the individual students within it, seems necessary. Subjective data is more difficult to identify than objective data, but it is just as essential for the total analysis. This section offers evidence of pupil progress by citing case studies of several students.

Bill was enrolled in the reading skills group. He was in one of the accelerated classes which was taking ninth-grade work. His Prep stanine was 7 or high average.

⁵⁴Gertrude H. Hildreth, Manual for Interpreting, p. 9.

The year before, his reading level score was 7.1. Diagnosis proved that Bill had good comprehension and word attack skills but lacked speed. Easy reading materials for practice in faster reading plus timed reading lessons improved his reading rate. By the end of the semester, Bill scored 9.9, a gain of two years and eight months.

Jose, from an average eighth-grade section, had a stanine of 6 and a reading-level score of 6.2. His weaknesses were in vocabulary and speed. Extensive reading and vocabulary study gave Jose the most spectacular gain of all. In the January test, he made 9.7, a gain of three years and five months.

A seventh-grade girl with a stanine of 3 needed instruction in the word attack skills. Help with phonics and syllabication improved Edna's ability to pronounce written words. Exercises to strengthen these skills were provided. Edna's gain was nine months. Her gain from 4.8 to 5.7 left her still below grade level, but she can continue to improve that.

Gloria made a good gain during the semester. She had taken the remedial reading course the year before when she was in seventh grade. She enjoyed the class and improved her reading ability a little. This year Gloria gained 1.3 in reading level.

Some of the students showed a loss in achievement level when the two reading scores were compared. Among them was Martha, an eighth-grader who had a 6.4 reading level the year before. Martha was an average student, industrious, and eager to improve. On the Gates Reading Survey test taken during the semester, she went up to 8.5. However, when the final test was given, her score fell to 5.7, a loss of -.7. Martha said at the time of the test that she didn't think she had done her best.

Adam was a slow learner but determined to succeed. He needed and was given work in comprehension and vocabulary. A Latin-American, Adam has a serious problem of vocabulary. He is non-voluble by nature and so gets little practice in language usage. He confided to the teacher that he intended to go to college someday. With his tenacious character, he probably will. His loss from 5.0 to 4.6 does not seem compatible with the improvement he exhibited in class.

Guadalupe was one of the better readers in his class. He was not a retarded reader, having scored 7.0 at the end of the seventh grade. He worked hard, if not enthusiastically, and showed improvement in daily work. By the end of the semester he was working at the ninth-grade level in the S.R.A. Laboratory. Nevertheless, he scored one month less than he had the previous year.

Daniel, with a Prep stanine of one, fell from 4.0 to 3.9, a loss of one month. He read orally fairly well, but slowly, and had poor comprehension. He had fair success on third-grade level material, but above that he had difficulty grasping the ideas.

Other cases are very interesting. George was almost a total non-reader in the seventh grade. He was bright in practical matters and was a good mechanic. His score of 3.9 at the end of the seventh grade was due to good guesswork. His score at the end of the semester, although statistically the same, came from being able to read a little of the test.

Glaforo, an eighth-grade student, left school for a month at the close of the semester to return to Mexico so that he could arrange to become a United States citizen. His English, and consequently his reading, improved amazingly during the course. His reading level rose from 4.5 to 5.0, a gain of five months.

Many other examples of different types of improvement can be cited: Irene, who began the class saying, "I hate reading," and after the first month, never said it again; Frank, who read every Dolch reading book the teacher could find for him; Ernestina, whose two month gain the teacher was so proud of; Thomas, who sulked because the counselor made him take the course, but who wanted to enroll again the

second semester; and the "bad" boy, who became the model student when he found he could succeed in a subject. The list could be extended to include every student in the teacher's five classes.

On the last class day the students were asked to write a paragraph telling what they had gotten out of the reading class. Some of the comments were:

"One thing I can tell you is that now I can sit down and read and know what I am reading."

"I am glad I took reading this semester because I improved my reading, and I'm doing fine in all of my reading subjects."

"I like the S.R.A. Reading Laboratory because it was fun to do. I can read faster and understand better."

"I've improved my reading ability and I've learned to read with carefulness and yet I am at ease when I do so."

"Before I took this course whenever I read silently, I usually had to go back and read over again quite a few times. Now I don't so much."

"In my opinion I have improved twice as much as I did last year."

The most impressive result of the special program was the students' attitude toward reading. They enjoyed reading better than they had and could read for longer periods of time. As they became less antagonistic toward reading, they read more and enjoyed it more.

This chapter has attempted to analyze and evaluate the results of the remedial reading program presented in

this study. The progress of the students was analyzed statistically and evaluated subjectively. Conclusions drawn from the compiled data will be presented in the next chapter.

CHAPTER IV

CONCLUSION

Introduction. The purpose of the present study is to evaluate the remedial reading program in the Edinburg Junior High School. This evaluative study seeks to ascertain whether or not the program achieves its objective of improving the reading efficiency of the students. A statistical analysis of the scores made by the students on standardized reading tests has been presented in the preceding chapter. The analytical evaluation is based on the performance of one hundred seven remedial reading students and ninety-one students not enrolled in the reading classes. Comparative methods are utilized to determine the value and worth of the remedial reading program.

This final chapter will attempt to answer the following questions that were posed in the statement of the problem in Chapter one. Does a statistical analysis of the results merit the program's inclusion in the curriculum? Would the students probably have gained in reading ability just as much without the course as with it? How do the results compare with other studies. What changes are indicated by the results?

Data utilized in the study. Six groups of students were formed for the statistical analysis. These students were enrolled at the time the final test was administered and had reading scores from the preceding year on record in the school files. The forty-two students in Group I are seventh graders from the two seventh-grade remedial reading classes. Group II is composed of forty students from the two eighth-grade remedial reading classes. Group III is made up of twenty-five reading skills pupils. The control groups are students not enrolled in the special reading classes. Group IV has thirty-four students from a high section. Group V has thirty-five average students. Twenty-two students from a low section form Group VI.

The test administered to the students, both at the end of the preceding year and at the end of the semester, is the Metropolitan Achievement Test. Different forms of the test were used so that the results would be comparable. Also used in the study are the stanine scores from the Pupil Record of Educational Progress Test taken in October during the semester.

Frequency tables of the reading grade level as determined by the standardized tests were made and the means computed. This was done for the May, 1960, test and for the January, 1961, test of each group. The stanine scores of all the eighth-grade students were combined to make a frequency

table and to find the mean. An expected or probable gain based on length of time in school and past achievement was computed for each group.

Statistical results. The mean for each group on the final January, 1961 test was compared with the mean for the previous year on the May, 1961, test. Gains were slight for the three remedial reading groups: Group I gained two months in reading level; Group II gained three months; and Group III gained six months. The three control groups experienced losses in grade level equivalent: Group IV lost eight months; Group V lost five months; and Group VI lost eight months.

The actual gains or losses were compared with the expected or probable gains. Only Group III gained more than was expected and that was just one month over. Group I was two months less; Group II was one month less; Group IV was one year and three months less; Group V was nine months less; and Group VI was one year and one month less.

Subjective evaluation. In addition to the statistical analysis, an evaluation based on the teacher's observations and on the students' comments has been presented. The observable results in attitude and interest showed a definite improvement. The students' interest in reading was increased and their attitude towards reading was better.

Conclusions. In the statement of the problem, the question of whether the students would have probably gained just as much without the course as with it was asked. Assuming that the statistics are accurate, the answer to this question would be that they would not have gained as much without the course as they did by taking it. The control groups revealed a loss whereas the remedial students did gain a little as measured by the standard achievement test.

Other reading programs were discussed in the survey of the literature. Their gains were much higher than those in the present study. In comparison, the grade level advancement of the Edinburg students is far below that made by the students in other studies.

Does the statistical analysis of the program indicate that the school should continue to offer the course of remedial reading to the students? Here again, the answer must be based on the assumption that the testing of the six groups is valid. According to the comparison of the statistics, the answer would be yes. The remedial reading students did gain more, comparatively speaking, than the control groups. According to actual gains, the answer would be no, since the gains were slight.

The examples of the case studies mentioned in the subjective evaluation show many improvements in reading ability. Not all of the factors relating to reading can be

measured in terms of statistics. The writer feels that most of the students gained in reading efficiency in many ways, even in cases where no statistical gain in reading level was made.

Recommendations. The study indicates several ways in which the remedial reading program in Edinburg Junior High school could be improved.

A limit on the number of students in each class should be imposed. In a class with twenty to twenty-five students, a teacher can give individual help to each student and still help over a hundred students during a semester. In classes over twenty-five, the amount of individual attention given to each student is very limited because of time. More students may be enrolled in the classes but less improvement is made.

Also needing improvement is the method of selecting the students to be given remedial training in reading. Some of the students are reading as well as their capabilities will permit. Others are good readers with poor vocabularies. Word studies for these latter students can be provided for in the regular classes. One method that would perhaps work in this school is teachers' recommendations. Students who are good in other areas but are unable to read well could be referred to the special reading classes.

If smaller classes are not possible because of large enrollment or scheduling difficulties, then the teacher should provide more word meaning exercises, more dictionary skills, and more language experiences for the bilingual students. An increased oral vocabulary would raise their reading comprehension and consequently their reading grade level scores.

The statistical results of a single test can never be totally reliable. Too many other factors must be considered as: pupil performance in class, improved attitudes, individual charts showing reading growth, increased concentration span, and students' enjoyment of reading. For these reasons, the teacher must not be discouraged by low statistical gains but must continue and improve her efforts to help each boy and girl realize his full potential reading ability. It is her responsibility to help every student acquire the reading skills necessary to meet the demands of life in our country where reading is so important.

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		Group 1		Group 2		Group 3		Group 4		Group 5		Group 6			
Students	Stanine	May 1960	Jan. 1961	Stanine	May 1960	Jan. 1961	Stanine	May 1960	Jan. 1961	Stanine	May 1960	Jan. 1961	Stanine	May 1960	Jan. 1961
APPENDIX A															
THE STANINE AND GRADE LEVEL FROM FIRST AND LAST TEST OF															
EACH STUDENT IN THE SIX GROUPS															
1.	6	6.2	6.7	4	5.3	5.3	6	7.3	9.1	3	9.7	8.2	4	5.9	4.9
2.	6	4.7	4.5	3	3.7	4.1	5	3.4	5.4	3	6.6	5.8	2	4.4	3.5
3.	3	3.1	3.4	3	5.0	5.4	9	9.7	7.6	3	5.4	4.2	1	3.0	3.9
4.	3	3.9	3.9	3	4.9	4.5	9	8.5	8.8	3	5.0	4.9	8	3.8	4.0
5.	3	7.1	7.1	3	4.4	4.0	3	7.3	7.3	3	4.8	4.3	7	3.8	3.9
6.	3	6.0	6.0	4	5.5	4.8	9	6.0	6.0	3	4.5	4.5	3	5.0	5.0
7.	5	3.9	4.9	4	4.5	4.2	9	3.1	10.4	4	4.7	4.3	4	5.5	4.8
8.	2	4.5	4.6	4	7.1	7.6	7	9.2	10.4	5	3.7	3.8	2	4.2	4.7
9.	3	4.2	4.9	3	4.2	4.6	4	6.1	7.6	3	6.3	4.9	4	4.2	4.4
10.	5	6.1	6.5	3	4.5	5.7	9	10.4	10.4	7	3.0	6.6	3	6.0	4.5
11.	6	6.1	6.8	4	3.9	4.5	3	7.1	3.6	3	3.2	7.0	2	4.4	3.3
12.	3	5.3	4.3	3	5.5	5.4	6	8.3	8.2	6	7.1	6.9	3	3.0	3.8
13.	5	5.2	5.5	4	5.3	5.4	6	8.9	10.4	6	7.3	7.6	3	4.7	3.3
14.	3	6.1	5.3	3	3.4	4.0	7	9.8	8.7	5	3.5	6.4	4	4.7	4.7
15.	4	6.1	6.3	4	5.8	5.7	7	7.1	9.9	8	8.5	9.5	5	4.7	4.4
16.	4	5.7	5.6	2	4.3	4.8	3	4.6	5.1	8	9.7	7.7	5	5.1	8.0
17.	4	5.2	4.6	3	3.9	5.0	5	7.8	9.4	5	7.7	7.3	6	6.0	3.9
18.	4	4.2	5.5	4	5.2	5.4	5	6.3	8.9	6	10.4	9.6	4	5.0	3.4
19.	3	5.2	5.0	3	4.5	4.3	7	10.4	10.4	5	6.3	5.7	4	6.6	8.7
20.	4	4.4	4.8	3	5.8	5.5	4	9.3	10.4	6	8.5	6.0	4	6.3	5.2
21.	2	5.3	5.5	3	4.3	4.6	8	10.4	10.4	5	6.0	6.2	5	5.5	5.2
22.	5	4.3	5.0	3	5.0	5.7	8	9.2	8.8	3	5.1	5.8	3	4.6	
23.	4	5.8	5.4	3	3.5	3.7	4	7.0	7.1	6	9.2	9.6	6	9.2	8.9
24.	3	5.0	5.2	4	4.6	4.5	4	8.0	8.3	8	9.7	9.6	4	6.0	5.4
25.	5	4.5	4.4	5	3.8	3.8				5	9.2	7.3	3	7.1	4.3
26.	3	7.0	6.9	3	4.1	3.8				5	8.3	6.5	6	6.1	5.8
27.	3	5.3	5.6	4	5.1	5.8				6	7.3	6.7	4	7.3	6.9
28.	4	4.4	5.8	4	5.1	4.8				6	8.3	7.4	3	5.3	5.2
29.	4	9.1	10.4	5	4.5	4.9				7	9.7	8.8	5	5.7	5.3
30.	2	4.5	5.4	5	4.7	5.3				6	6.6	6.2	4	4.9	4.5
31.	5	6.4	5.7	5	5.9	5.4				7	8.7	7.7	3	5.1	4.5
32.	4	6.2	7.6	3	4.8	4.4				7	10.4	9.1	4	5.7	5.3
33.	3	4.3	5.0	3	4.7	4.8							4	4.7	4.6
34.	6	5.2	5.5	4	6.1	6.2									
35.	2	5.2	6.2	4	5.1	5.7									
36.	2	4.9	4.2	3	4.3	4.0									
37.	3	4.0	4.7	3	3.7	3.9									
38.	3	5.7	6.0	3	5.3	4.9									
39.				3	5.3	6.3									
40.				3	5.7	4.3									
41.															
42.															

APPENDIX A

THE STANINE AND GRADE LEVEL FROM FIRST AND LAST TEST OF
EACH STUDENT IN THE SIX GROUPS

The vita has been removed from the digitized version of this document.